

WHAT IS CLAIMED IS

1. An electrical switch assembly for controlling the operation of an electrical appliance, which assembly comprises at least first and second electrical elements, the first electrical element comprising an on/off switch for initially switching on said appliance, the second electrical element comprising a pressure-sensitive variable resistor for subsequently adjusting the operating condition of said appliance, the variable resistor comprising a first part having a resilient deformable and electrically conducting resistive surface and a second part having a surface including at least two contacts and a resistive element connecting from one of said contacts to the other contact, one of said parts being supported for movement to press against the other part such that their surfaces bear against one another, thereby causing the resistive surface to deform against the surface of the second part over an area of contact and causing electrical connection between the resistive surface and the resistive element, which together then provide a resultant resistance between the two contacts of a value that reduces as said area of contact increases corresponding to the pressure acting upon the two parts, the assembly including an operating mechanism for operating the first and second electrical elements, said mechanism incorporating manual operating means arranged for initial movement to operate the on/off switch and subsequent

movement, while the on/off switch is on, to operate the variable resistor.

2. The electrical switch assembly as claimed in claim 1,  
5 wherein the resistive surface includes fine carbon powder.

3. The electrical switch assembly as claimed in claim 1,  
wherein the resistive surface has a convex shape facing  
the surface of the second part of the variable resistor.

10 4. The electrical switch assembly as claimed in claim 1,  
wherein the first part of the variable resistor comprises  
a portion made of a resilient deformable and electrically  
conducting resistive material to provide the resistive  
15 surface.

5. The electrical switch assembly as claimed in claim 4,  
wherein the resistive material includes fine carbon  
powder.

20 6. The electrical switch assembly as claimed in claim 1,  
wherein the first part of the variable resistor comprises  
a resilient deformable cup-shaped body including a base  
having an inner side on which the resistive surface is  
25 provided.

7. The electrical switch assembly as claimed in claim 6,  
wherein the cup-shaped body includes a substantially

frusto-conical peripheral wall that is foldable.

8. The electrical switch assembly as claimed in claim 6, wherein the resistive surface includes fine carbon powder.

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9. The electrical switch assembly as claimed in claim 1, wherein the resistive element includes fine carbon powder.

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10. The electrical switch assembly as claimed in claim 9, wherein the resistive element comprises a carbon film.

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11. The electrical switch assembly as claimed in claim 1, wherein said one part is supported for movement to press against the other part in a direction substantially perpendicular to their surfaces.

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12. The electrical switch assembly as claimed in claim 1, wherein the first part of the variable resistor is supported for movement to press against the second part, and the second part is fixed.

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13. The electrical switch assembly as claimed in claim 12, wherein the second part of the variable resistor is provided by a portion of a printed circuit board.

14. The electrical switch assembly as claimed in claim 1, wherein the first and second electrical elements have relatively larger and smaller current ratings

respectively.

15. The electrical switch assembly as claimed in claim 1, wherein the on/off switch comprises a micro-switch.

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16. The electrical switch assembly as claimed in claim 1, wherein the resistive surface and the resistive element are arranged to come into electrical contact with each other when the surfaces of the first and second parts of the variable resistor bear against one another.

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17. The electrical switch assembly as claimed in claim 1, wherein the resistive surface and said at least two contacts are arranged to come into electrical contact with each other when the said surfaces of the first and second parts of the variable resistor bear against one another.

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18. The electrical switch assembly as claimed in claim 17, wherein the surface of the second part of the variable resistor includes more than two said contacts arranged close together for electrical contact with the resistive surface, and a corresponding said resistive element connecting across the adjacent contacts of each pair.

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19. The electrical switch assembly as claimed in claim 1, wherein the operating mechanism includes a spring resiliently biasing the manual operating means against operating the first and second electrical elements.

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20. The electrical switch assembly as claimed in claim 1,  
wherein the manual operating means comprises first and  
second parts for operating the on/off switch and the  
5 variable resistor respectively, the first part having a  
relatively shorter operative length than the second part.

21. The electrical switch assembly as claimed in claim  
20, wherein the first and second operating parts are  
10 separate parts.

22. The electrical switch assembly as claimed in claim  
21, wherein the first and second operating parts are  
covered by a resiliently deformable sheet element for  
15 operation through a single pressing action at the sheet  
element.

23. The electrical switch assembly as claimed in claim  
21, wherein one of the first and second operating parts  
20 has a portion engaging the other operating part for moving  
the other operating part during operation.

24. The electrical switch assembly as claimed in claim 1,  
comprising one said on/off switch and two said variable  
25 resistors, wherein the manual operating means comprises  
three separate press members for operating the on/off  
switch and the two variable resistors respectively.

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25. The electrical switch assembly as claimed in claim 24, wherein the press member for the on/off switch is positioned between the press members for the two variable resistors.

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26. The electrical switch assembly as claimed in claim 24, wherein the press member for one of the variable resistors has a first portion engaging the press member for the on/off switch for simultaneous operation, and the  
10 press member for the other variable resistor has a second portion engaging the first portion and in turn the press member for the on/off switch for simultaneous operation.

27. The electrical switch assembly as claimed in claim  
15 26, wherein the two press members for the variable resistors are covered by resiliently deformable sheet means, said means having two regions covering the two press members respectively for individual depression to operate one or both variable resistors.

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28. The electrical switch assembly as claimed in claim 27, wherein the sheet comprises a single sheet including a portion that is between the two regions and supported by a fixed member against depression.

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29. An electrical appliance incorporating the electrical switch assembly as claimed in claim 1, said appliance comprising a casing in which the switch assembly is

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located such that the operating mechanism is accessible,  
an electrical device located in the casing for performing  
a function of the appliance, and an internal electronic  
control circuit for controlling the operation of the  
5 electrical device, wherein the on/off switch is connected  
to the electrical device for switching on the electrical  
device, and the variable resistor is connected to the  
control circuit for adjusting the operating condition of  
the electrical device.

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30. The electrical appliance as claimed in claim 29,  
wherein the casing includes a resiliently deformable wall  
portion, immediately behind which the operating mechanism  
is located for operation through depression at the wall  
15 portion.

31. The electrical appliance as claimed in claim 29,  
wherein the electrical device comprises an electric motor.

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32. The electrical appliance as claimed in claim 29,  
wherein the casing is elongate and acts a handle.

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